



Chapter 6: A Tour of the Cell
Campbell, Biology, 7th Edition

Answer each of the following questions on separate paper. All answers may be typed or hand-written... but do your OWN work.

1. Explain what happens to the surface area to volume ratio as the volume (size) of an object increases. How does this help to explain why cells are so tiny?
2. Explain the process that is done to separate the various cellular organelles from one another for individual study.
3. What are the major differences between prokaryotic and eukaryotic cells? Diagram a typical prokaryotic cell and label it (draw it yourself).
4. How do internal membranes make metabolism a more efficient process?
5. List the major structures (and their functions) found in plant and animal cells.
6. Describe the similarities and differences between chromatin and chromosomes.
7. What major process occurs in the nucleus of a eukaryotic cell? Where does protein synthesis take place?

8. Distinguish between free and bound ribosomes in terms of structure and function (be specific).
9. What are the components of the endomembrane system? Why is it referred to as a system?
10. Describe the differences between the smooth and rough ER. Include a summary of the functions performed by each.
11. What is a vesicle? What is the general function of a vesicle?
12. What are the functions of the golgi body? How is the structure of the golgi body conducive to its function?
13. What are the functions of lysosomes? What do they use to accomplish these functions? Describe the genetic disease Tay-Sachs.
14. Describe the various types of vacuoles found in living cells.
15. Describe the general structure and function of the mitochondria and chloroplasts. Why are chloroplasts not found in animal cells, while plants have both chloroplasts and mitochondria? What is unique about mitochondria and chloroplasts (i.e., what do they have that other non-nuclear organelles do not)?
16. What are the major roles of peroxisomes in eukaryotic cells?
17. Explain how an organelle can be moved throughout the cell.
18. Describe the major components of the cytoskeleton. Include a description of their structure and function in living organisms.
19. Describe cytoplasmic streaming in plant cells. What does it help the plant do?
20. What functions do cell walls perform in plant cells? Sketch and label a basic cell wall.
21. What are the major components and functions of the extracellular matrix in animal cells?
22. Explain how individual cells can associate into tissues, organs, and systems in living cells if each has its own membrane separating it from its external environment.
23. Trace the path of a protein destined for use as an enzyme in the mitochondria from DNA until it is "recycled" by the cell.
24. Label the structures of the attached plant and animal cell.



